Enclosure 2
Statement of Basis

Introduction

Boeing Plant 2 is located on East Marginal Way South in Seattle, and the property extends into Tukwila, Washington. The 107 acre site is bordered by the Duwamish Waterway to the west. Since 1936, Boeing has manufactured airplane parts at Plant 2. Much of the facility is now used for storing parts and equipment. Boeing is planning for the demolition of certain buildings and building slabs in the 2-40s and 2-60s areas of the Plant 2 facility. As part of these planning efforts, Boeing conducted an assessment of residual chemicals hazards in the planned work area. This assessment was conducted according to the work plan "Plant 2 Pre-demolition Building Cleanup, 2-40s Series Demo, Pits and Drains, Residual Chemicals Sampling and Analysis Plan, Boeing Plant 2, Seattle/Tukwila, Washington," Reference 2 to this approval. This assessment included identifying features in the work area affected by spills or releases of polychlorinated biphenyls (PCBs) with as-found concentrations of 50 parts per million (ppm) or greater. These PCBs are regulated for disposal as PCB remediation under the Toxic Substances Control Act (TSCA) and implementing regulations at 40 Code of Federal Regulations (C.F.R. Part 761). Features are considered pipe penetrations, holes, cracks, pits, vaults, pipes, drains, utility trenches, foundations and concrete floor slabs.

Based on the results of this assessment, Boeing prepared a work plan for removal and off-site disposal of PCBs greater than 50 ppm and requested EPA approval of this work as a risk-based disposal approval under 40 C.F.R. § 761.61(c). Boeing subsequently amended the initial work plan to include an additional feature in Area 72, and to address PCBs remaining in the Plant foundation at levels below 50 ppm (Reference 6). The remainder of this Statement of Basis documents EPA's review of Boeing's RBDA application and EPA's basis for issuing its approval.

EPA's Evaluation of Boeing's Risk-Based Disposal Approval Application

Cleanup and Verification of Features with PCBs >50 ppm

In evaluating Boeing's request for a risk-based disposal approval, EPA has considered the following issues:

- Adequacy of site characterization for cleanup purposes
- Risks from PCBs during demolition and cleanup work
- Decontamination of equipment used for cleanup work
- Verification of cleanup activities
- Storage for disposal of PCB remediation waste
- Disposal of PCB remediation waste
- Relationship to other cleanup programs

Adequacy of Site Characterization for Cleanup Purposes

The methodology used to identify features contaminated with PCBs greater than 50 ppm is documented in Sections 1.1 and 1.2 of Reference 2. Based on its review of this methodology, EPA accepts Boeing's identification of features with PCBs at concentrations greater than or equal to 50 ppm that will be removed and disposed of pursuant to this approval. EPA also accepts Boeing's characterization and cleanup of residual chemicals and debris contained in Plant 2 features with concentrations greater than or equal to 50 mg/kg. As documented in Section 1.0 of Reference 1, these PCB remediation wastes were removed and disposed of as TSCA waste by contracted personnel as part of characterization work supporting this risk-based disposal approval (RBDA).

Risks from PCBs During Demolition and Cleanup Work

Boeing has proposed to conduct demolition work associated with features addressed under this approval using excavation machinery or hand-held jackhammers or similar tools. This approach is reasonable for the work to be performed, but may create dust containing PCBs. As discussed below under "Discussion of Conditions," EPA is addressing this concern with performance requirements to contain or control dust and airborne emissions during demolition activities. Typically, such controls would involve either physical enclosures, such as tents, or use of water mists or sprays. Either approach is appropriate, provided any water used for dust control is not applied in excess, which might contribute to the spread of PCB or other contamination.

Decontamination of Equipment Used for Cleanup Work

Boeing's RBDA application states that all equipment used for removal and demolition will be decontaminated using solvent soap washing techniques or will be cleaned by hand-wiping with a solvent in accordance with the decontamination procedures required under 40 C.F.R. § 761.79, or will be discarded as contaminated TSCA-waste and placed in a roll-off box to be disposed of at a Subtitle C chemical waste landfill permitted to accept TSCA waste under 40 C.F.R. § 761.75. These requirements, specifically the requirement to decontaminate equipment in accordance with 40 C.F.R. § 761.79 or to dispose of it in a chemical waste landfill permitted under 40 C.F.R. § 761.75, ensure that all equipment will be decontaminated to the extent necessary to ensure no unreasonable risk of injury to health or the environment. Since roll-off boxes will be lined, the liner can be disposed of with the PCB remediation waste, avoiding the need to decontaminate roll-off boxes. The RBDA application does not address disposition of any personal protective gear associated with work under this approval. Boeing must dispose of it according to the requirements of 40 C.F.R. § 61.61(a)(5)(v)(A).

Verification of Cleanup Activities

Boeing's RBDA includes requirements to conduct confirmation sampling according to the requirements of 40 C.F.R. Subpart O, with specific application of these requirements documented in Section 2.10 of the RBDA application. These requirements include recordkeeping according to 40 C.F.R. § 761.61(a)(9) and 40 C.F.R § 761.125(c)(5). With regard to application of these requirements, each feature will represent an individual removal site.

Confirmation samples will be taken of the remaining concrete following feature removal, and will be collected from the edges of the removal area in the form of bulk concrete samples or concrete dust collected by coring a 1-inch wide by 3-inch deep hole. Boeing's RBDA application does not provide any documentation of the extent to which PCB contamination may have migrated into concrete to justify the sampling depth of three (3) inches. However, a three-inch sampling depth is a reasonable compromise between a sufficient sampling depth to capture the maximum penetration depth of possible PCB contamination and an excessive sampling depth that would bias sample results by diluting contaminated concrete with clean concrete.

Boeing's RBDA application documents field sample documentation, handling and analysis requirements in Section 2.11.

Sampling according to these requirements and a decision criterion of 50 ppm total PCBs, as measured by Aroclor mixtures, is appropriate to the scope of this RBDA as discussed above. Since soils and any PCBs with concentrations less than 50 ppm which may remain in concrete will be addressed through the RCRA AOC, additional sampling and analysis or information needs may be established through the RCRA corrective action process. Any such requirements are not within the scope if this approval.

Storage and Disposal of PCB Remediation Waste

Following excavation of concrete and other materials from features contaminated with PCBs, Boeing's RBDA application states that the material will be placed in lined roll-off boxed prior to shipment for off-site disposal. This method of storage for disposal is appropriate for the materials to be excavated under this authorization, and is authorized by 40 C.F.R. 761.65(c)(1). As discussed under "Discussion of Conditions" below, EPA is establishing conditions to address the potential for small amounts of residual liquids to be present in the PCB remediation waste, and to prevent air emissions of dust from the roll-off boxes.

Boeing's RBDA application does not propose to generate or clean up any liquid PCB remediation waste. Since liquids in contact with features contaminated with PCBs greater than 50 ppm may be encountered (for example, in transformer vault sumps), EPA is including packaging requirements to ensure liquid PCB remediation waste is appropriately cleaned up.

Disposal of PCB Remediation Waste

Boeing's RBDA application states that PCB remediation waste generated pursuant to this authorization will be disposed of in a hazardous waste landfill permitted under the Resource Conservation and Recovery Act (RCRA) Subtitle C (or by a RCRA-authorized state). Although the scope of this approval does not extend to disposal of PCB remediation waste, the proposed method of disposal is compliant with the requirements of 40 C.F.R. § 761.61(a)(5)(i)(B)(*ii*).

<u>Cleanup of PCBs At As-found Concentrations <50 ppm</u>

Boeing's original RBDA application (Reference 3) did not document whether PCBs remaining in Plant 2 foundation structures at as-found concentrations less than 50 ppm are properly classified as PCB remediation waste at 40 C.F.R. § 761.3 and which, if any, are subject to the requirements

of 40 C.F.R.§ 761.61. The definition of PCB remediation waste at 40 C.F.R. § 761.3 includes certain PCBs at as-found concentrations less than 50 ppm:

> *PCB remediation waste* means waste containing PCBs as a result of a spill, release, or other unauthorized disposal, at the following concentrations:
>
> Materials disposed of prior to April 18, 1978, that are currently at concentrations ≥50 ppm PCBs, regardless of the concentration of the original spill;
>
> Materials which are currently at any volume or concentration where the original source was ≥500 ppm PCBs beginning on April 18, 1978, or ≥50 ppm PCBs beginning on July 2, 1979; and
>
> Materials which are currently at any concentration if the PCBs are spilled or released from a source not authorized for use under this part. [...]

EPA expects facility owners/operators to make a good faith effort to determine whether or not their facility contains or will be managing PCB remediation waste. In those instances where PCBs are known to be present and despite making such an effort, an owner/operator unable to make an affirmative and defensible demonstration of the absence of PCB remediation waste, EPA considers the PCBs to be PCB remediation waste subject to the requirements of 40 C.F.R. 761.61.

Given the dates during which Boeing conducted manufacturing activities at the Plant 2 facility (beginning in 1936), it is highly certain that at least some spills, releases or disposal of PCBs that are currently at greater than or equal to 50 ppm (as-found concentrations) occurred prior to April 18, 1978, and are thus properly classified as PCB remediation waste. EPA's original RBDA approval provided authorization to cleanup up such spills and releases.

Boeing's initial RBDA application, however, did not provide any documentation of original source concentrations of PCBs or the dates of spills, releases or disposal of PCBs. EPA could not, therefore, evaluate whether any remaining PCBs at as-found concentrations of less than 50 ppm may be classified as PCB remediation waste. During informal conversations between Boeing and EPA prior to Boeing's February 7, 2011 submission, Boeing suggested that PCBs remaining in Plant 2 foundation concrete could have been the result of paints or coatings with an original source concentration of PCBs less than 50 ppm. Such PCBs would not be subject to TSCA authority, either as PCB remediation waste or as PCB bulk product waste. However, Boeing has not provided EPA with data or other information that supports an affirmative and defensible demonstration that PCBs with as-found concentrations less than 50 ppm fail to meet the definition of PCB remediation waste cited above. Therefore, EPA considers PCBs within the scope of the Plant 2 demolition activities currently at concentrations less than 50 ppm to be PCB remediation waste subject to the requirements of 40 C.F.R. 761.61.

Boeing's application for an RBDA (Reference 1) states that concrete generated during foundation demolition, including concrete contaminated with PCB as-found concentrations less than 50 mg/kg, will be crushed and re-used as site fill in the excavated tunnels of the Plant 2 facility. As noted in the original statement of basis for this RBDA approval, soil management during and following demolition activities, including target cleanup levels for the soils

underlying the features removed under this plan have been developed separately under the Plant 2 Resource Conservation and Recovery Act (RCRA) [1]Administrative Order on Consent (AOC). The *Interim Measure (IM) Work Plan, 2010 Soil and Stormwater Management, Demolition of Buildings 2-44 and 2-49* (Golder 2010a) was submitted by The Boeing Company (Boeing) to the Environmental Protection Agency (EPA) in July 2010 and approved by EPA in September 2010. The IM Work Plan was subsequently modified by Boeing to address building demolition sequence and schedule changes, and to update the work plan to reflect the draft soil and groundwater Target Media Cleanup Levels (TMCLs) developed by the EPA. The draft TMCLs include a standard for PCBs of 19 parts per million (ppm), based on the expected continued industrial use of the Plant 2 property. Boeing submitted the *Modification to Interim Measure IM Work Plan, 2010/2011 Soil and Stormwater Management Plan, Demolition of Buildings 2-41, 2-44 and 2-49* (Golder 2010b) to EPA in October 2010, and EPA approved the plan in December 2010. Boeing submitted an Addendum to the approved IM Work Plan, cited as Reference 8 in support of this RBDA approval, to address concrete management during demolition.

EPA concludes that it is appropriate to apply the cleanup levels developed through the RCRA corrective action process to contaminated concrete which may meet the definition of PCB remediation waste and that is to be cleaned up, sampled and disposed of under this RBDA approval as part of Plant 2 demolition. EPA's basis for reaching this conclusion is that risks from PCB remediation waste with as-found concentrations <50 ppm s that will be disposed of on-site under this RBDA approval, and soils being cleaned up under the RCRA AOC pose similar human health and environmental risks. Further, EPA seeks to ensure that requirements under TSCA are consistent with, and equally protective as, those established under RCRA. Any PCBs remaining in building foundation concrete are expected to be limited to small, near-surface areas, and will be at very low concentrations, well below the draft TMCL concentration following demolition, crushing and placement in the Plant 2 tunnels. To ensure that PCB concentrations in demolition debris placed in Plant 2 tunnels do not exceed this draft TMCL, Boeing will perform sampling of the crushed concrete as documented in bullets 3-6 of Reference 6, and Section 2.0 of Reference 8. EPA will review these sampling data to ensure that all concrete placed in Plant 2 tunnels satisfies the 19 ppm industrial TMCL under both the RCRA AOC and this RBDA approval.

EPA is therefore establishing interim authorization in this approval for demolition, crushing and on-site disposal in Plant 2 tunnels of those PCBs with as-found concentrations below 50 ppm which may meet the definition of PCB remediation waste, as cleanup, sampling and disposal of PCB remediation waste under the authority of 40 C.F.R 761.61(c). In granting this interim authorization, EPA finds that the proposed method of cleanup, sampling and disposal of PCB remediation waste will not pose an unreasonable risk of injury to health or the environment. EPA considers the placement of PCB remediation waste in Plant 2 tunnels as disposal of PCB remediation waste in a "unit," as defined in 40 C.F.R. 761.3. EPA is not, however, authorizing the Plant 2 tunnels as a "chemical waste landfill" as defined in 40 C.F.R. 761.3.

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[1] Section 2.0 of Boeing's RBDA application states "soil management *during* demolition activities, [...] will be developed separately under the Plant 2 RCRA AOC", emphasis added. As a point of clarification, EPA's authority under the Plant 2 RCRA AOC is not limited to soil management during excavation, but may continue following completion of demolition activities, particularly if requirements under the AOC include any on-going monitoring, operations and maintenance, or institutional controls.

As with cleanup of soils under the RCRA AOC, EPA expects that crushed concrete remaining on-site will require physical controls, such as a cap, as well as institutional controls and monitoring, to fully satisfy the TSCA no unreasonable risk standard. To ensure effective integration with similar measures expected to be put into place under the RCRA AOC for soils, EPA is not establishing such physical controls, monitoring and institutional controls for crushed foundation concrete at this time, but expects to do so when Boeing completes the Plant 2 soils Corrective Measures Study, and EPA selects the final soils remedy.

Discussion of Conditions

1. Boeing is authorized to perform cleanup, verification, and on-site storage for disposal of PCB remediation waste associated with features with PCB concentrations greater than or equal to 50 mg/kg (parts per million) as documented in Section 2.0 of Reference 7. Boeing will conduct this work as documented in Boeing's RBDA application (Reference 3) and the "Revised Work Plan, TSCA Material Management, Plant 2 Demolition Area, Seattle, Washington" (Reference 7).

This condition establishes overall authorization for the proposed cleanup and storage for disposal of PCB remediation waste with as-found concentrations greater than 50 ppm, and defines the scope of the authorized activities. This condition is similar to that in the original RBDA approval, but includes authorization for an additional feature in Area 72.

EPA notes that Boeing did not explicitly request authorization for on-site storage for disposal of PCB remediation waste in its RBDA application. To provide Boeing with reasonable flexibility in implementing requirements of this approval, and to accommodate unforeseen circumstances which may result in PCB remediation waste remaining on-site longer than anticipated, EPA is including explicit authorization for storage for disposal, for a time period up to the duration of this approval as stated in Condition 4, in this condition.

2. Boeing is granted interim authorization to cleanup and sample concrete with as-found PCB concentrations less than 50 mg/kg as documented in Boeing's February 7, 2011 letter (Reference 6), and use of Plant 2 tunnels as a unit for disposal of such concrete following crushing. The scope of this interim authorization includes bullets 1-6 associated with the plan for demolition and cleanup of the Plant 2 foundation documented in Reference 6. Boeing must conduct all sampling and analysis associated with crushed concrete according to a written sampling and analysis plan that specifies all field and analytical laboratory quality assurance/quality control that will be used to document the quality of the resulting analytical data. Boeing must keep records that include the written sampling and analysis plan, documentation of all sampling and analysis conducted according to the sampling and analysis plan, and the quantity and approximate location where crushed concrete subject to this approval is placed in Plant 2 tunnels. Boeing will ensure that these records are made available to EPA upon request.

This condition establishes interim authorization for cleanup of PCBs with as-found concentrations less than 50 ppm which may meet the definition of PCB remediation waste. This condition also establishes the disposal requirements for the crushed concrete, including sampling and analysis of the crushed concrete placed in the Plant 2 tunnels. EPA will use the results of

this sampling and analysis as the basis in part for establishing engineering and institutional controls, and environmental monitoring requirements, following completion of demolition, crushing and placement of foundation concrete. As noted in the Statement of Basis section "Cleanup of PCBs At As-found Concentrations <50 ppm" above, EPA is authorizing the Plant 2 tunnels as a "unit," as defined in 40 C.F.R. 761.3 solely for disposal of PCB remediation waste with as-found concentrations less than 50 ppm that are subject to this approval. EPA is not establishing any authorization for the Plant 2 tunnels as a chemical waste landfill, or for disposal of any PCBs other than those specifically identified in this approval.

EPA is including a record keeping requirement to ensure documentation of sampling and analysis is available to EPA, as well as documentation of compliance with the 19 ppm industrial TMCL for PCBs discussed in the Statement of Basis.

3. Concurrent with the submission to EPA of the Plant 2 Corrective Measures Study (CMS) Report associated with the existing Resource Conservation and Recovery Act (RCRA) Administrative Order for Plant 2, Boeing will provide a copy of this report to EPA according to Condition 11. The CMS report will contain specifications and requirements for all engineering and institutional controls necessary to ensure that PCBs remaining on-site do not pose an unreasonable risk of injury to health and the environment, along with the placement locations and analytical results for the concrete backfill. Boeing will also provided EPA a copy of the Interim Measures Completion Report documented in Section 3.0 of Reference 8.

This condition requires Boeing to provide EPA with documentation that will support EPA's selection of the final soils corrective measures at Plant 2. EPA will use this information to modify this Approval to finalize cleanup approval for PCBs in foundation concrete with as-found concentrations less than 50 ppm, including engineering and institutional controls, and environmental monitoring necessary to ensure satisfaction of the TSCA no unreasonable risk standard.

4. This approval will remain in effect for a period of two years following the most recent approval or modification signature date, or the duration of the authorized activities, whichever is shorter. Boeing may request an extension to this authorization by providing a written request to EPA according to Condition 11.

This condition establishes a maximum time period during which cleanup and storage for disposal may occur. Boeing's RBDA application states that the activities under this approval are expected to take 18 months to complete. To reasonably accommodate some delays which may be encountered in conducting this work, EPA is allowing some additional time to complete the work. To accommodate the expected series of revisions to this RBDA approval, EPA is clarifying that the signature date is that of the latest approval or medication, not the original signature date.

5. In conducting demolition activities authorized by this approval, Boeing shall ensure that effective controls are in place to prevent or minimize airborne dispersal of concrete or other material contaminated with PCBs. These controls may include temporary enclosures, or water sprays or mists. If water sprays or mists are used, the quantity of water shall be the minimum required for effective dust control, and shall be applied in a manner that minimizes or prevents the accumulation of liquids, run-off or infiltration into underlying soils.

This condition ensures that sources of air emissions which may be reasonably expected from the demolition work under this approval, and which could result in human or environmental exposures to PCBs are appropriately controlled or mitigated. Since the appropriate controls may vary among the various features to be demolished under this approval, EPA is establishing general performance requirements for these controls.

6. Boeing will ensure that lined roll-off boxes or other containers in which PCB remediation waste is placed under this approval will have liners adequate to prevent any incidental liquids from leaking from the boxes or containers. Roll-off boxes containing PCB remediation waste must be covered with a tarpaulin or other suitable cover to prevent potential air dispersal except when adding PCB remediation waste to a roll-off box. Storage for disposal of bulk PCB remediation waste must occur within the footprint of the 2-40s and 2-60s Areas.

This condition ensures that storage for disposal of bulk PCB remediation waste is conducted in a manner that minimizes releases of incidental liquids and dust to the extent necessary to ensure no unreasonable risk of injury to health or the environment. EPA is not establishing a requirement for secondary containment, since roll-off boxes are expected to remain on-site for a relatively short period of time. EPA is requiring storage to occur only within areas associated with the demolition to ensure that even the small chance of spills or releases from roll-off boxes will not result in the spread of PCB contamination.

7. Except for incidental liquids and water associated with control of air dispersal of concrete or other material contaminated with PCBs, any liquids in contact with or associated with PCBs being removed pursuant to this approval must be collected, placed in containers meeting applicable Department of Transportation requirements at 49 C.F.R. Part 178, and managed according to applicable requirements of 40 C.F.R. Part 761.

Boeing's RBDA does not propose to mange liquid PCB remediation waste. However, several of the features that will be cleaned up under this approval have, or may contain, liquids in contact with PCBs regulated for disposal. This condition ensures that if such liquids are encountered, they are appropriate collected, packaged and managed.

8. Boeing will ensure that the health and safety plan discussed in Section 4.0 of Reference 1 documents appropriate training and personal protective equipment required for all personnel that may be exposed to PCBs during demolition activities under this approval. Boeing will provide EPA with a copy of this health and safety plan according to Condition 11 no later than two weeks prior to the start of demolition activities.

Boeing's RBDA application does not include a health and safety plan, and it does not discuss any training requirements for personnel conducting work under this approval. Both are important to ensure that work is conducted safely and in a manner that does not pose an unreasonable risk of injury to health or the environment. This condition ensures that a health and safety plan is prepared and that it includes elements that EPA considers necessary. EPA is not including an explicit requirement for EPA's review and approval, but this condition does ensure that EPA has access to the plan. If EPA should identify deficiencies that require revision, EPA may establish necessary revisions through modification of this approval pursuant to Condition 10.

9. Nothing in this approval relieves The Boeing Company of any obligation to comply with other rules and regulations applicable to the activities subject to this approval.

This condition establishes that this approval under TSCA does not relieve Boeing of any other obligation that it may have with respect to the approved activities.

10. If at any time before, during, or after storage of PCB remediation waste pursuant to this approval, Boeing possesses or is otherwise made aware of any data or information (including but not limited to site conditions that differ from those presented in the application) that activities approved herein may pose an unreasonable risk of injury to health or the environment, Boeing must report such data or information via facsimile or e-mail to EPA according to Condition 11 within five working days, and in writing to the Regional Administrator within 30 calendar days of first possessing or being made aware of such data or information. Boeing shall also report in the same manner, new or different information related to a condition or any element of the approved storage activities if the information is relevant to this approval. EPA may direct Boeing to take such actions it finds necessary to ensure the approved storage activities do not pose an unreasonable risk of injury to health or the environment. Boeing shall follow such direction until written approval is obtained from EPA that finds the condition(s) requiring such direction no longer poses an unreasonable risk of injury to health or the environment. EPA reserves the right to modify or revoke this approval based on information provided pursuant to this condition, or any other information available to EPA that provides a basis to conclude that activities covered by this approval pose an unreasonable risk of injury to health or the environment.

This condition ensures that if any information not available to EPA at the time this approval is issued becomes known, and it will be made available to EPA for purposes of ensuring that activities subject to this approval continue to pose no unreasonable risk of injury to health or the environment. This condition also ensures EPA's ability to make changes to the storage activities, including withdrawing approval for storage, as necessary to ensure no unreasonable risk of injury to health or the environment.

11. Submissions required by this approval shall be provided to EPA as follows:

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